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First Results of 28 GHz Superconducting Electron Cyclotron Resonance Ion Source for KBSI Accelerator

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Since 2009, a 28 GHz superconducting electron cyclotron resonance (ECR) ion source was developed to produce high current heavy ion for the compact linear accelerator at KBSI (Korea Basic Science Institute). The aim of this study was to generate fast neutrons with the proton target by p(Li,n)Be reaction. The fabrication of the key parts, which are the superconducting magnet system with the liquid helium re-condensed cryostat and the 10 kW high-power microwave considering for optimum operation at the 28 GHz ECR Ion Source, were completed in 2013. In last year, the waveguide components were connected with a plasma chamber including a gas supply system and the plasma chamber were inserted into the warm bore of superconducting magnet. Also, the high voltage system was installed for bias disk and extraction disk. After installation of ECR ion source, we had reported results about ECR plasma ignition at ECRIS 2014 in Russia. In this year, we were extracted multi-charged ions from various gases that are argon, oxygen, xenon and so on. Also we were obtained some results about beam properties and they are verified by beam diagnostic system of low energy beam transport system. We report about their results and explain about current status of KBSI accelerator project.